CONTROL HOME AUTOMATION WITH VOICE COMMAND USING ARDUINO

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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Computer Science (Computer Systems and Networking).

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Pada masa kini, seperti yang telah kita ketahui teknologi yang digunakan di rumah telah semakin canggih. Contohnya, pada zaman dahulu masih belum wujud lagi menggunakan kuasa elektrik Perkara ini menyukarkan kehidupan mereka dengan ketidakadaan sumber kuasa elekrik. Manakala, pada zaman kini. semuanya telah berubah dan menjadi serba lengkap dengan adanya teknologi yang dapat memudahkan pengguna dalam mendapatkan sumber kuasa elektrik. Contohnya ialah kini telah terdapat penciptaan terhadap pemetik untuk menghidupkan suis lampu, televisyen atau kipas hanya dengan menekan butang pada pemetik tanpa perlu pengguna bangun untuk menghidupkan suis. Selain itu, tujuan projek ini dilaksanakan kerana, untuk memberi kelainan pada teknologi yang ada pada masa sekarang. Seterusnya, mempelbagaikan lagi cara bagi mengawal alatan elektrik di rumah. Di dalam kehidupan kita ini, semua orang pasti pernah merasakan keadaan yang menyebabkan kita tidak mendapatkan kesihatan yang baik atau di dalam situasi yang memenatkan. Perkara ini haruslah boleh di atasi dengan cepat dan mudah. Oleh itu kita memerlukan teknologi untuk mengatasi masalah ini. Maka, di dalam sistem ini ia dicipta bagi memudahkan pengguna dalam mengawal alatan elektrik hanya menggunakan satu aplikasi. Jadi, di dalam sistem ini terdiri daripada dua utama komponen iaitu perkakasan komponen iaitu menggunakan Arduino Uno R3 dan untuk komponen perisian menggunakan aplikasi mudah alih. Fokus sistem ini tentang bagaimana untuk membangunkan Sistem Automasi untuk mengawal peralatan rumah. Jadi dengan sistem ini, pengguna boleh mengawal suis dengan telefon mudah alih mereka. Kesimpulannya, adalah diharapkan bahawa sistem ini boleh menyumbang kepada pengguna bagi meningkatkan dan memudahkan kehidupan mereka.

ABSTRACT

Nowadays, as we already know the technologies used at home have become increasingly rapidly. For example, in the past there has not been any use of electric power. This matter makes their lives unpredictable with the power source. Meanwhile, in the present time. everything has changed and become fully equipped with the technology that enables users to get electricity. An example is that there has now been a creation of the remote control to turn on the switch, television or fan switch simply by pressing the button on the remote control without the need for a user to switch on the main switch. Additionally, the purpose of this project is to be implemented because, to provide a disparity to the technology currently available. Next, diversify the way to control electrical appliances at home. In our lives, everyone must have felt the condition that we did not get good health or in a tiring situation. This should be done quickly and easily. So, we need technology to solve this problem. Thus, in this system it is created to facilitate the user in controlling electrical equipment using only one application. In this system consists of two main components namely component hardware which is using Arduino Uno R3 and for component software using mobile app. Focus this system on how to develop Automated Systems to control home appliances. This system can make users to control switches with their mobile phones. In conclusion, it is hoped that this system can contribute to the user to enhance and facilitate their lives.

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LIST OF ABBREVIATIONS

CHAUVC	Control Home Automation using Voice Command
RAD	Rapid Application Development
IDE	Integrate Development Environment
UMP	Universiti Malaysia Pahang

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND STUDY

Nowadays, there are many advancements that give a big impact, either inside or outside the country. As we already know, today's homes there are different tools for controlling electronic equipment. Furthermore, in order to create added value the focus should be on the smart home environment instead of only on the used technology (Rosslin & Tai-hoon, 2010). Therefore, we need a more advanced tool for our users to facilitate their use in everyday life

In addition, this project will enable users to control home appliances faster than using them manually. It requires a more sophisticated control device to do something new and can be easier to use by others. The lesser person will have difficulty when he is having trouble reaching the place of the switch. In addition, problems can also occur when an unhealthy person does the activity.

Other, using automatically through integration of home appliances with smart phone connectivity will provide a good innovative because it provides many benefits to users. The smartphones have the perfect features and can be made to communicate with any other device in the connection options network such as Bluetooth.

With this smartphone, we should be wise in using the opportunity to automate a task for this smart house, this smartphone can be connected to a temporary network indoors with electronic equipment. In this app it allows user to control using apps on smartphone which is can be control any home application. The system to turn on/off home application through this conversation is a mobile app developed with Android and can be targeted at a wide market that will benefit the public.

1.2 PROBLEM STATEMENT

As we know, home application which is using electric power is one of the compulsory things that will exist in every home. It will be used by user to make their life more comfortable and easier in daily life. Others, it is placed in the necessary areas such as in the living room, bedroom and in the bathroom.

But the problem is when users used a normal method to open the electric switch, they have a risk of electric shock. Not only that, it brings to a waste of energy electricity when using normal method to control home application.

Additionally, if the user used voice control it will make more efficient either than used smartphone that have more than 3 buttons to control different type of home appliance.

1.3 AIM OF OBJECTIVE

The main objective of this project is to improve the innovation of technology using remote control to voice control command with Bluetooth device. Objectives are a specific action and planning that are aimed to achieve successfully as well as with project goals.

i. To develop more efficient way to turn on/off home application using voice command.

ii. To learn and study existing light system and home automation concept.

iii. To provide home application control that operates with wireless connection.

1.4 SCOPE OF THE PROJECT

By understanding the operation and knowledge we can create the Control Home Automation Using Voice Command (CHAUVC). This scope is important to the system

which is they must be identified, so it is appropriate to implement. Below is the project scope that will include in this system which is:

i. User
    a. The user of this project is for people who have smartphones and have apps to control home appliances at home. The user will be easier to control by using their smartphone and with voice command.

ii. Function available
    a. Mobile Application used to control the switch using voice command.
    b. Bluetooth device for the switch control.
    c. Android Studio software was used to design GUI for user.

1.5 THESIS ORGANIZATION

There will have five chapters in this project. Firstly, chapter one which is the background studies that tell about what are the new or difference type of technology that we can improve in our life. In this chapter it is also includes objective of the project to achieve the improvement of technology. Others, there are also have problem statement, scope and thesis organization. Throughout this chapter, problem statements will be identified where it leads to development to find a solution for the project.

Next, chapter two discusses literature review conducted to find out about project information. Literature review include the introduction of project studies in general, methods or technologies that are appropriate to meet the project. It is also as a reference source which can be used in the project to solve the problem happen in life.

Then, chapter three discusses the methodology used in project development and the overall approach about what we will be used to develop to this project. Through this chapter, a methodology will be selected for the development of the system that will be

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